

Work Order ID 76243

76243

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November-07-11 2:50:43 PM

Item ID: D205-634-041 Accept *N900040100* Setup Start *NS1*
 Revision ID: Stop *NS2*
 Item Name: Replacement Skidtube
 Start Date: 07/11/2011 Start Qty: 1.00 *1* Cust Item ID:
 Required Date: 23/11/2011 Req'd Qty: 1.00 *1* Customer:
 Reference:

Approvals: Process Plan: M.C.J Date: 11/11/07 Tooling: Date: Run Start *NR1*
 QC: Date: SPC (Y/N): Date: Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
D2580-041	Rev.E

100 0.00
 100 DOCUMENT CONTROL
 DC Memo 0.00
 Document Control Photocopy D205-634 bluefile & type labels per PPP D205-634-041- CHG002

N/A *[Signature]*

110 0.00
 110 BENDING MACHINE - SKIDTUBES
 CNC Bend 1 Memo 0.00
 CNC Delta 100 Bender 1-Bend as per program D2580.C on CNC Bender and Folio 16

JW 11-11-16

2-Cut tubes as per Dwg. D2580
 3- scribe batch# in aft end of tube
mo 11-11-16

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120		0.00							
120									
Skidtubes	Memo	0.00							
Skidtubes	1- Deburr ends and remove bending marks								
	2- Prepare tube for welding as per QSI 004								
130	QC5- Inspect part completeness to step on W/O	0.00							
130									
QC	Memo	0.00							
Quality Control									

3 SMD 11-11-21

B

1 8 BE 11-11-21

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod.Mgr	Approval QC Inspector

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Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
140		0.00							

140

Skidtubes

Skidtubes

Memo

0.00

1-Weld step D2576 as per Dwg. D2580 and QSI 004
 A/R Aluminum Rod M118735 BE-11-21

2-Grind welds on step as per Dwg D2580

SAD 11-11-21

3-Weld spacers as per dwg D2580

A/R M118735 BE-11-21

3- *** N/A**** Insert D4202-1 spacer, swage as per QSI002 and trim/ grind
 flush per QSI002 and dwg. Hold x-bolt with DT9701 Use tube expander 1/2
 x17G to start expansion and finish with 1/2 x 18G to achieve dwg dimension.

4-Drill holes for wearplates using DT 8217 & DT8937 Open holes to 19/64",
 adjust stopper not to hit web. Debur

BE 11/11/21

6-Drill pilot holes for aft cap using DT 8215 Open holes to 0.208". Debur

7-Drill pilot holes for Tow ring using DT8091, open to .640" and Debur

SAD 11-11-22

C-Bore DP 11-11-22

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Accept

N900040100

Setup Start *NS1*

Stop *NS2*

Item Name: Replacement Skidtube

*** 1 ***

Cust Item ID:

*** 1 ***

Customer:

Reference:

Run Start *NR1*

Stop *NR2*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

150

QC10- Inspect visual per QSI004- ground welds

0.00

150

QC

Memo

0.00

Quality Control

160

QC5- Inspect part completeness to step on W/O

0.00

160

QC

Memo

0.00

Quality Control

170

Pressure Wash per QSI005 4.3

0.00

170

HandFinish

Memo

0.00

Hand Finishing

Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch and leave fwd cap out of solution.

XØ M-L n/4/22

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180	White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum	0.00							
180 Powdercoat									
Powder Coating									
	<i>m 118439</i>								
	Memo								
	START TIME: <i>1:40</i>	0.00							
	OVEN TEMPERATURE: <i>320 OF</i>								
	FINISH TIME: <i>2:10</i>								
190	QC3- Inspect Part Finish	0.00							
190 QC									
Quality Control	Memo	0.00							

1/8 m-f 11/11/22

1 g 11/11/22

W/O:		WORK ORDER CHANGES					
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200

0.00

200

HandFinish

Hand Finishing

Memo

0.00

1-Install inserts & wearplates & Gaskets as per Dwg. D2580. Use a drop of Sikaflex on insert holes before installing wearplates

A/R Sikaflex-291 11119443
 Sikaflex expire date: 12/01

2-Coat D2594-3 O' rings with Petroleum Jelly and install on D2594-1 plugs as per Dwg D2580

3-Inspect for foreign object per QSI 024

4-Install 2855 Aft Cap as per Dwg D2580 and seal Fwd Step & Aft Cap with

Sikaflex. Clean excess adhesive
 A/R Sikaflex-291 11119443
 Sikaflex expire date: 12/01

5-Wing Walk as per Dwg D2580 and QSI 005 4.4
 Batch: 11119482

1 0 94.4/4/23

W/O:		WORK ORDER CHANGES					
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 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
210	QC5- Inspect part completeness to step on W/O	0.00							
210		0.00							
QC	Memo								
Quality Control	Inspect Aft Cap, Fwd Step and Wing Walk of work to Current Step Inspect for Foreign objects per QSI 024								
220		0.00							
220	Packaging	0.00							
Packaging	Memo								
Packaging	Identify and pack for shipping as per PPPD205-634-041								
	Location: _____								
	PPP Rev: _____								
230	QC21- Final Inspection - Work Order Release	0.00							
230		0.00							
QC	Memo								
Quality Control									

Sulu/23

PP

76318

11/11/23

11/11/23

MF 11-11-23

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Picklist Print

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Work Order ID: 76243

76243

Parent Item: D205-634-041

D205-634-041

Parent Item Name: Replacement Skidtube

Start Date: 07/11/2011

Required Date: 23/11/2011

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:N 02.08.28 FP was QC5 in Step 27; Added QC5 to Step 30
 KJ IPP Rev P 10.02.19
 per PAR09-043 EC verified by:DD
 IPP Rev. O 06.02.28 Added paperwork EC
 IPP Rev:P 07-07-09 SS Wearplates & Gaskets JLM IPP Rev:Q
 10.12.01 as per chg003 DD verf:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

D4202-1		Manufactured	No			140	Each	492.0000	20	20			
---------	--	--------------	----	--	--	-----	------	----------	----	----	--	--	--

D4202-1

D2579

Spacer

**

JE 11-11-21

B76002 x20

Location	Loc Qty	Loc Code
LG002	492	
66929	106	
67129	196	
67308	1	
67430	140	
72639	49	

D2580-1		Manufactured	No			110	Each	5.0000	1	1			
---------	--	--------------	----	--	--	-----	------	--------	---	---	--	--	--

D2580-1

B76423

**

①

JW 11-11-16

205 Skidtube bent detail

Location	Loc Qty	Loc Code
LG	3	
72965	1	
75282	2	
ST046	2	
75284	2	

W/O:		WORK ORDER CHANGES					
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Work Order ID: 76243

76243

Parent Item: D205-634-041

D205-634-041

Parent Item Name: Replacement Skidtube

Start Date: 07/11/2011

Required Date: 23/11/2011

Start Qty: 1.00

Required Qty: 1.00

D2576-3 Manufactured No

140 Each 114.0000 1 1

D2576-3

Step (maching detail)

**

BE-11-11-21

Location

Loc Qty

Loc Code

LG

114

66156

14

70883

50

74136

50

D2855 Manufactured No

200 Each 12.0000 1 1

D2855

Cap

**

yl ululzz

Location

Loc Qty

Loc Code

FP007

12

65519

2

65569

10

AN3-5A Purchased No

200 Each 928.0000 2 2

AN3-5A

Bolt

**

yl ululzz

Location

Loc Qty

Loc Code

ST350

928

115371

46

117423

382

118626

300

119355

200

AN960JD10L NAS1149D0332J Purchased No

200 Each 0.0000 2 2

***AN960JD10I ***

Washer

**

M 118389 (x2) yl ululzz

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Parent Item: D205-634-041

D205-634-041

Parent Item Name: Replacement Skidtube

Start Date: 07/11/2011

Required Date: 23/11/2011

Start Qty: 1.00

Required Qty: 1.00

ALS7-1032-130

Purchased

No

200

Each

2,139.000

50

50

AI S7-1032-130

**

yl 11/11/22

Insert

Location

Loc Qty

Loc Code

ST281

139

117717

27

118966

112

ST282

2000

119530

2000

x50

AN3C4A

Purchased

No

200

Each

2,285.000

50

50

AN3C4A

**

yl 11/11/22

BOLT

Location

Loc Qty

Loc Code

ST350

2285

117313

2

117688

5

117872

22

118112

16

118451

2

118706

264

118838

974

119328

1000

x50

AN960C10L

NAS1149C0332

Purchased

No

200

Each

0.0000

50

50

***AN960C10I ***

washer

**

11/11/24 (x50) yl 11/11/22

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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D205-634-041

Parent Item Name: Replacement Skidtube

Start Date: 07/11/2011

Required Date: 23/11/2011

Start Qty: 1.00

Required Qty: 1.00

D3566-13	Manufactured	No	200	Each	32.0000	1	1	
D3566-13								**
Gasket								<u>11/11/22</u>

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
FP	29	B
73322	29	
FP014	3	
68341	1	
72149	2	

<u>X1</u>
<u> </u>
<u> </u>
<u> </u>
<u> </u>

D3566-5	Manufactured	No	200	Each	32.0000	1	1	
D3566-5								**
Gasket								<u>11/11/22</u>

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
FP002	32	
74387	10	
75069	22	

<u>X1</u>
<u> </u>
<u> </u>

D3566-1	Manufactured	No	200	Each	37.0000	2	2	
D3566-1								**
Gasket								<u>11/11/22</u>

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
FP002	35	
73303	9	
74518	26	
FP015	2	
68924	2	

<u>X2</u>
<u> </u>
<u> </u>

D3564-11	Manufactured	No	200	Each	7.0000	1	1	
D3564-11								**
Wearshoe								<u>11/11/22</u>

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
FP019	7	
73146	7	

<u>B7407 5</u>
<u>11/11/22</u>

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Parent Item Name: Replacement Skidtube

Start Date: 07/11/2011

Required Date: 23/11/2011

Start Qty: 1.00

Required Qty: 1.00

D3564-13 Manufactured No

200 Each 19.0000 1 1

D3564-13

Wearshoe

**

xl 11/11/22

Location Loc Qty Loc Code

FP001 18

73323 18

FP017 1

71594 1

xl

D3564-9 Manufactured No

200 Each 18.0000 1 1

D3564-9

Wearshoe

**

xl 11/11/22

Location Loc Qty Loc Code

FP 13

73345 13

FP019 5

67590 4

69943 1

xl

D3564-5 Manufactured No

200 Each 24.0000 1 1

D3564-5

Wearshoe

**

xl 11/11/22

Location Loc Qty Loc Code

FG 2

34806 2

FP001 12

74543 12

FP19 10

73330 10

xl

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Parent Item Name: Replacement Skidtube

Start Date: 07/11/2011

Required Date: 23/11/2011

Start Qty: 1.00

Required Qty: 1.00

D2594-3

Manufactured No

200

Each

768.0000

16

16

**

Handwritten: 11/11/22

D2594-3

O-Ring, 205 Skidtube

Location

Loc Qty

Loc Code

FP004

198

73490

198

FP-A

570

65518

41

66952

231

73490

298

Handwritten: X16

D2594-1

Manufactured No

200

Each

384.0000

16

16

**

Handwritten: 11/11/22

D2594-1

Plug, 205 Skidtube

*Handwritten: **

Location

Loc Qty

Loc Code

FP

384

73401

384

Handwritten: 1374442

Handwritten: X10

Handwritten: X6

W/O:		WORK ORDER CHANGES					
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LIST OF MATERIALS					
ITEM	QTY -041	QTY -045	QTY -047	PART NUMBER	DESCRIPTION
1	X			D2580-041	SKIDTUBE ASSEMBLY
2		X		D2580-045	SKIDTUBE ASSEMBLY
3			X	D2580-047	SKIDTUBE ASSEMBLY
4	1	1	1	D2500-1-190	EXTRUSION
5			16	D2570	BUSHING
6	1	1	1	D2576-3	STEP
7	20	24	25	D2579	SPACER
8	16	16	8	D2594-1	PLUG
9	16	16	8	D2594-3	O-RING
10	1	1	1	D2596	205 WEB
11	1	1	1	D2855	AFT CAP
12	1	1		D3564-5	WEARSHOE
13	1	1		D3564-9	WEARSHOE
14	1	1		D3564-11	WEARSHOE
15	1	1		D3564-13	WEARSHOE
16	2	2		D3566-1	GASKET
17	1	1		D3566-5	GASKET
18	1	1		D3566-13	GASKET
19			1	D4406-041	WEARPLATE ASSEMBLY
20			1	D4406-043	WEARPLATE ASSEMBLY
21	50	50		ALS7-1032-130 or AKS7-1032-130 or AKS4-1032-130 or AELS-1032-130	INSERT
22	50	50		AN3C4A	BOLT
23	2	2	2	AN3-5A	BOLT
24			8	AN4-45A	BOLT
25	50	50		NAS1149C0332R	WASHER (AN960C10L)
26	2	2	2	NAS1149D0332J	WASHER (AN960JD10L)
27			8	MS21042-4	NUT (OR MS21042L4)

GENERAL NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: CHEMICAL CONVERSION PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB
POWDER COAT ASSEMBLY (-041/-047) GLOSS WHITE (REF 4.3.5.1) PER DART QSI 005 4.3
POWDER COAT ASSEMBLY (-045) GREEN SANDEX (REF 4.3.5.8) PER DART QSI 005 4.3
BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4.
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: D2580-041 = 34.5 lbs
D2580-045 = 34.5 lbs
D2580-047 = 37.7 lbs
- 8) WELDING PER DART QSI 004.
- 9) INSERT D2596 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP.
- 10) BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- 11) USE DART DRILL TEMPLATE DT8217 & DT8937 ONLY FOR D2580-041/-045 TO LOCATE AND DRILL Ø0.297 HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTIONS B-B AND F-F (50 PLACES) AFTER FINISH. INSTALL AN3C4A BOLTS AND NAS1149C0332R WASHERS WITH SIKAFLEX-241/291.
- 12) INSERT D2594-1 PLUG C/W D2594-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE) AFTER FINISH (16 PLACES FOR D2580-041/-045 AND 8 PLACES FOR D2580-047)
- 13) IT IS ACCEPTABLE TO GRIND A RELIEF IN THE D2855 AFT CAP TO PREVENT INTERFERENCE WITH THE SPACER AT THIS LOCATION

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11/11/07

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2011-08-29

E	ADD D2580-047 (ZN C4-7) AND D2580-7 (ZN B3-8); INCLUDED DEO D2580-D-1; REFORMATTED DRAWING TO CURRENT STANDARDS; DT8217 & DT8937 WAS TD2577-205 (ZN C4-1)	RF	11.06.21
D	CHANGE TO SS WEARPLATES AND GASKETS, INCLUDE DEO 9124/9183	PH	07.04.05
C	REDRAWN, INCLUDED DEO 9094/9097	CP	98.08.26
B	AS MANUFACTURED	DS	96.12.02
A	NEW ISSUE	DS	96.09.16
REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN	RF		
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	11.06.21		

DART AEROSPACE LTD
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. REV. E
D2580 SHEET 1 OF 8
TITLE
205 SKIDTUBE ASSEMBLY NTS
SCALE

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

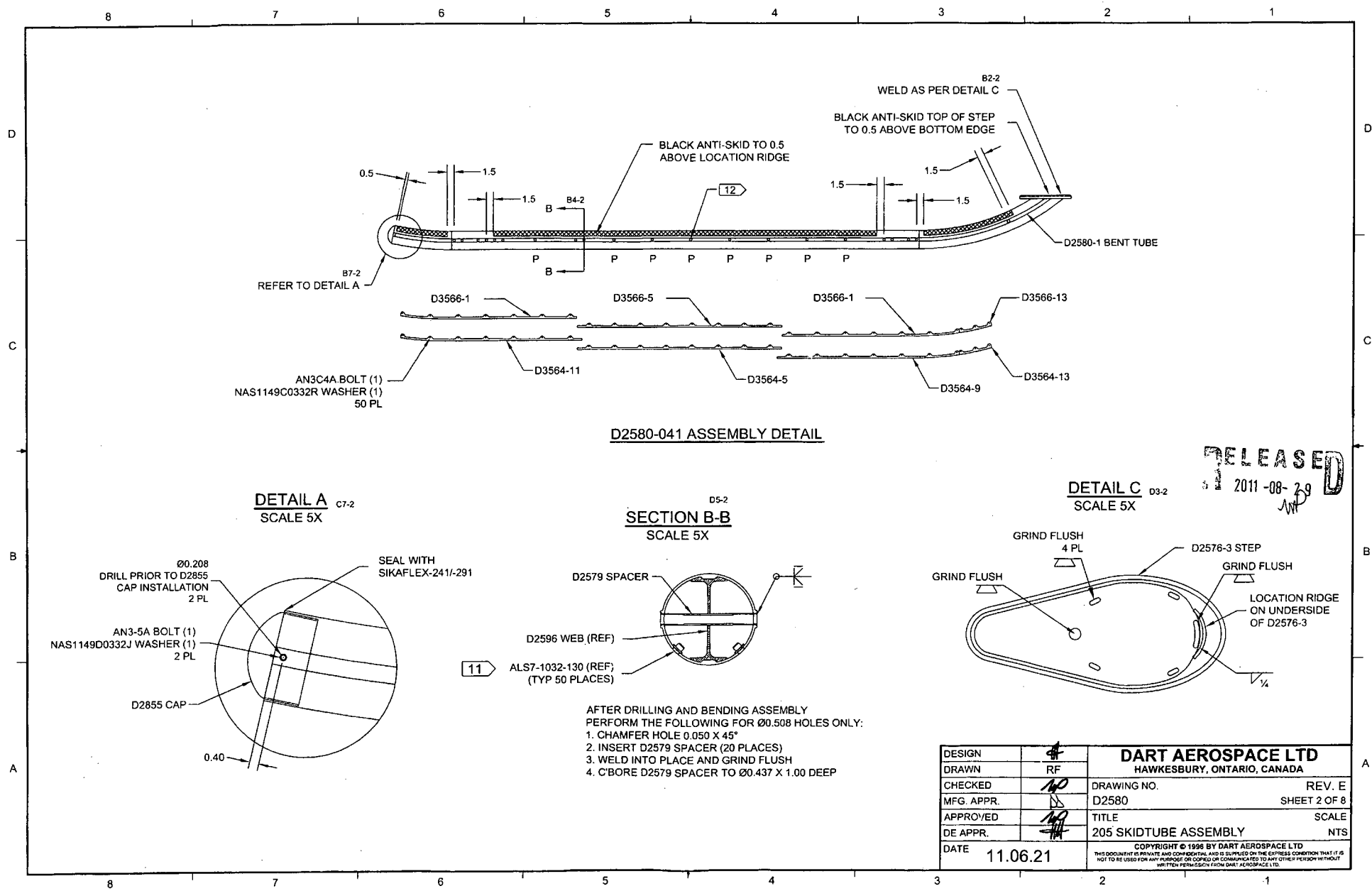
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Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

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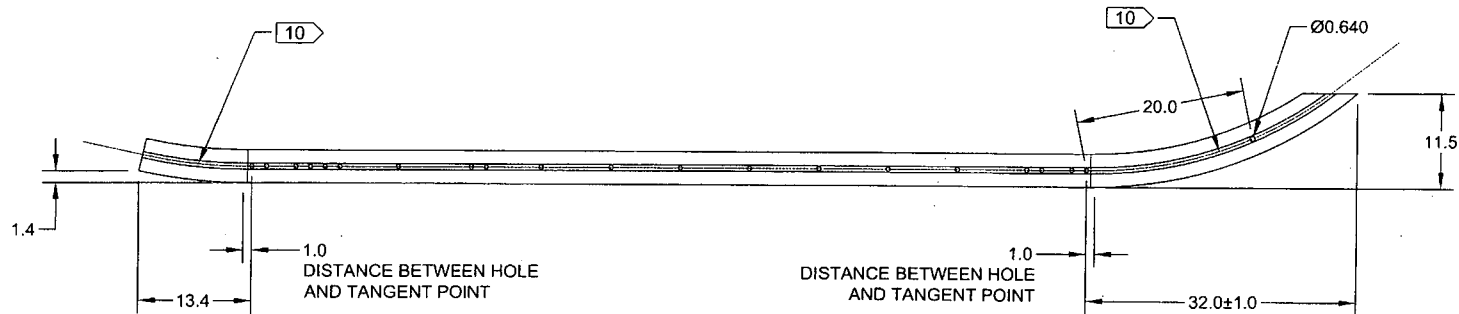
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			






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D2580-1 BENT TUBE
(MAKE FROM D2580-101 TUBE)

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CHECKED		DRAWING NO.	REV. E
MFG. APPR.		D2580	SHEET 3 OF 8
APPROVED		TITLE	SCALE
DE APPR.		205 SKIDTUBE ASSEMBLY	NTS
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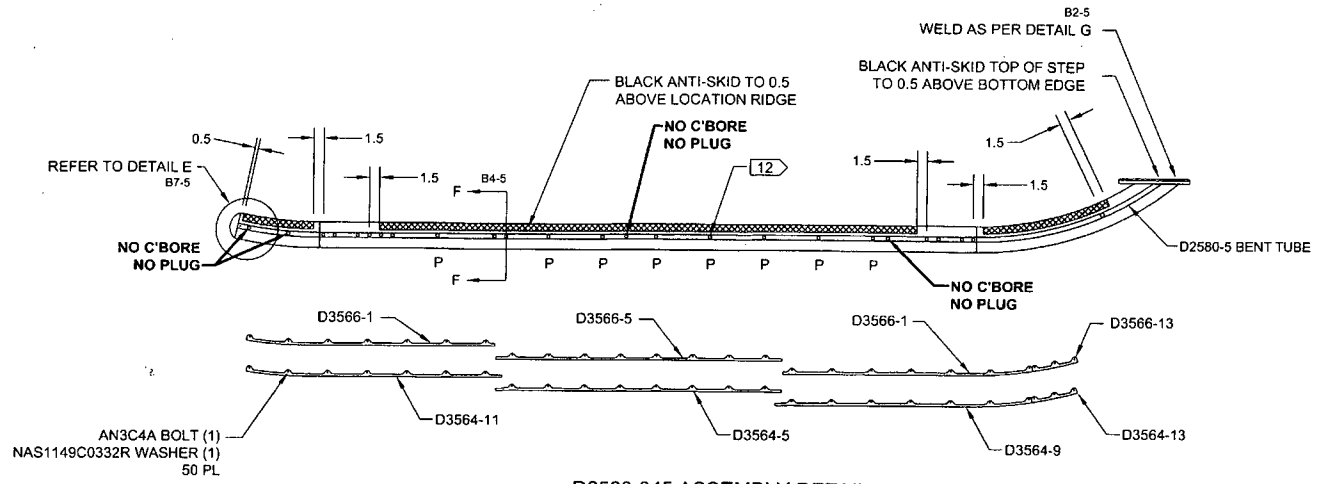
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Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

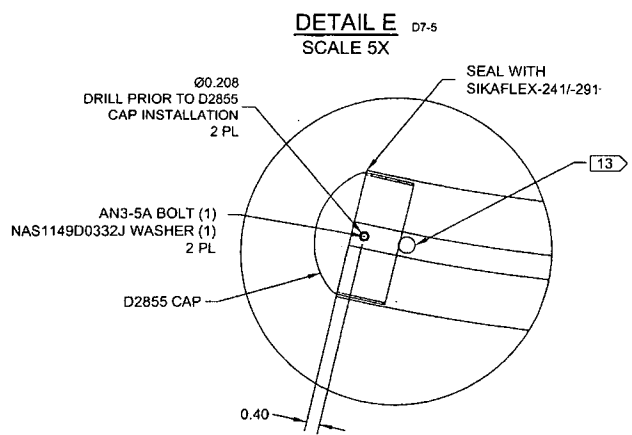
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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

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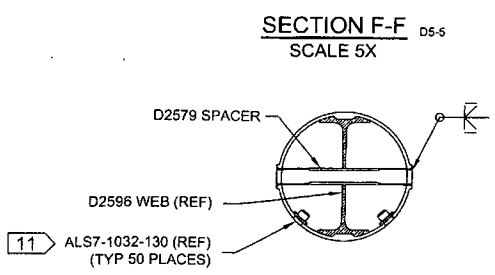
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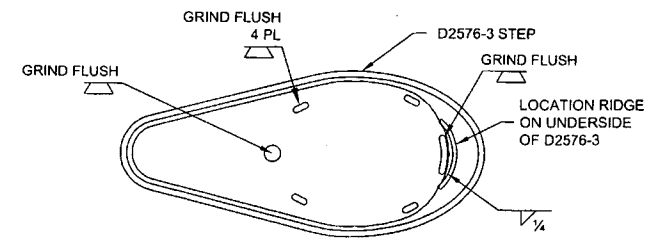
D2580-045 ASSEMBLY DETAIL



DETAIL E D7-5 SCALE 5X



SECTION F-F D5-5 SCALE 5X



DETAIL G D3-5 SCALE 5X

- AFTER DRILLING AND BENDING ASSEMBLY PERFORM THE FOLLOWING FOR Ø0.508 HOLES ONLY:
1. CHAMFER HOLE 0.050 X 45°
 2. INSERT D2579 SPACER (24 PLACES)
 3. WELD INTO PLACE AND GRIND FLUSH
 4. C'BORE D2579 SPACER TO Ø0.437 X 1.00 DEEP

DESIGN	RF	DART AEROSPACE LTD HAWKESSBURY, ONTARIO, CANADA	
DRAWN	RF		
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MFG. APPR.	RF	D2580	SHEET 4 OF 8
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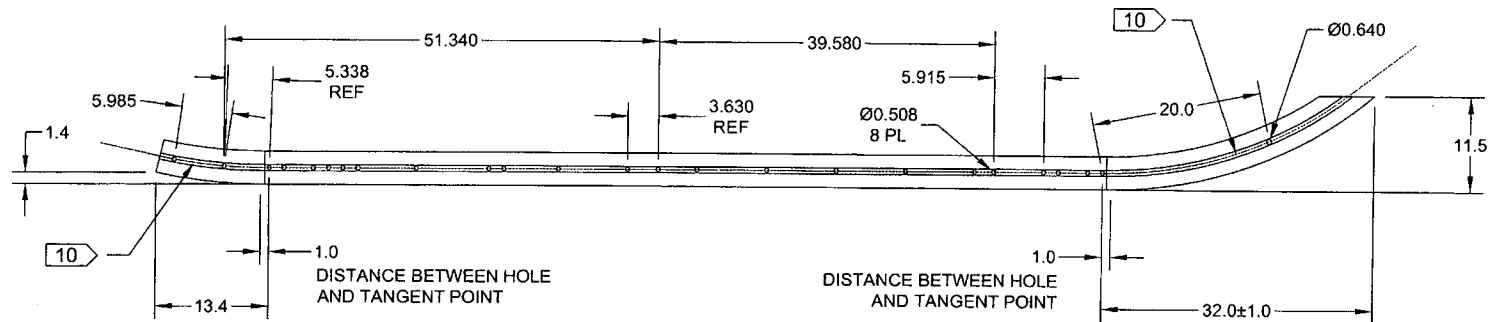
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D2580-5 BENT TUBE
(MAKE FROM D2580-101 TUBE)

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MFG. APPR.	AP	D2580	SHEET 5 OF 8
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

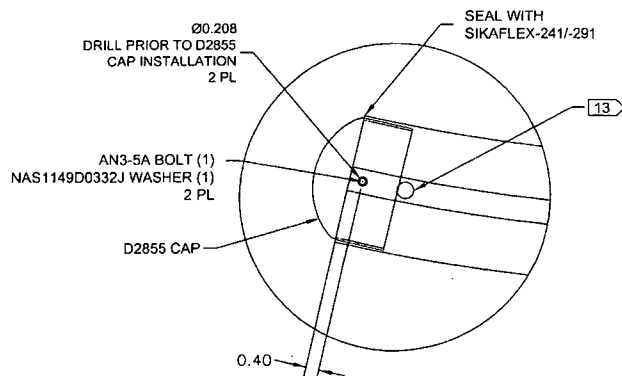
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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

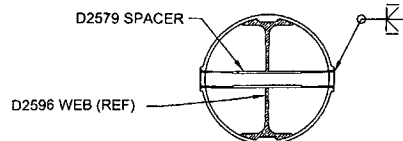
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[illegible]

DETAIL H C6-7
SCALE 5X



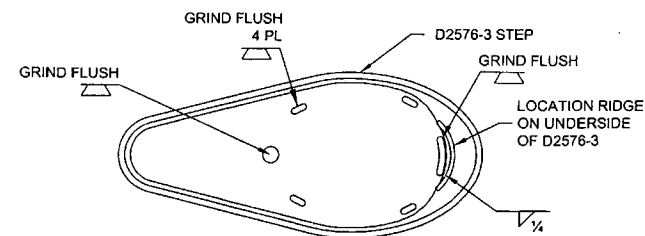
SECTION I-I D5-7
SCALE 5X



**AFTER DRILLING AND BENDING ASSEMBLY
PERFORM THE FOLLOWING FOR Ø0.508 HOLES ONLY:**

- 1. CHAMFER HOLE 0.050 X 45°**
- 2. INSERT D2579 SPACER (25 PLACES)**
- 3. WELD INTO PLACE AND GRIND FLUSH**
- 4. C'BORE D2579 SPACER TO Ø0.437 X 1.00 DEEP**

DETAIL J D3-7
SCALE 5X



DESIGN	1	DART AEROSPACE LTD	
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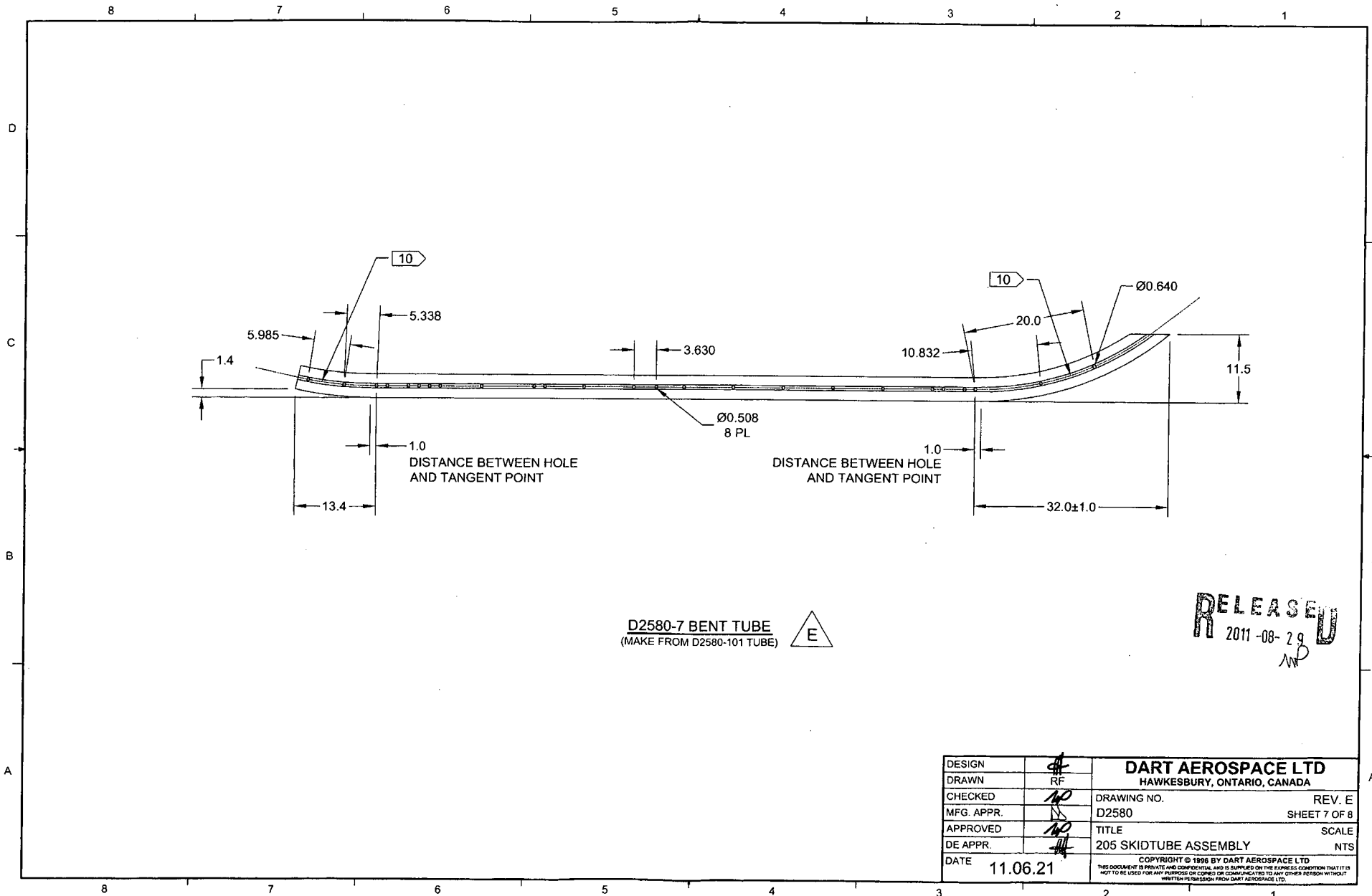
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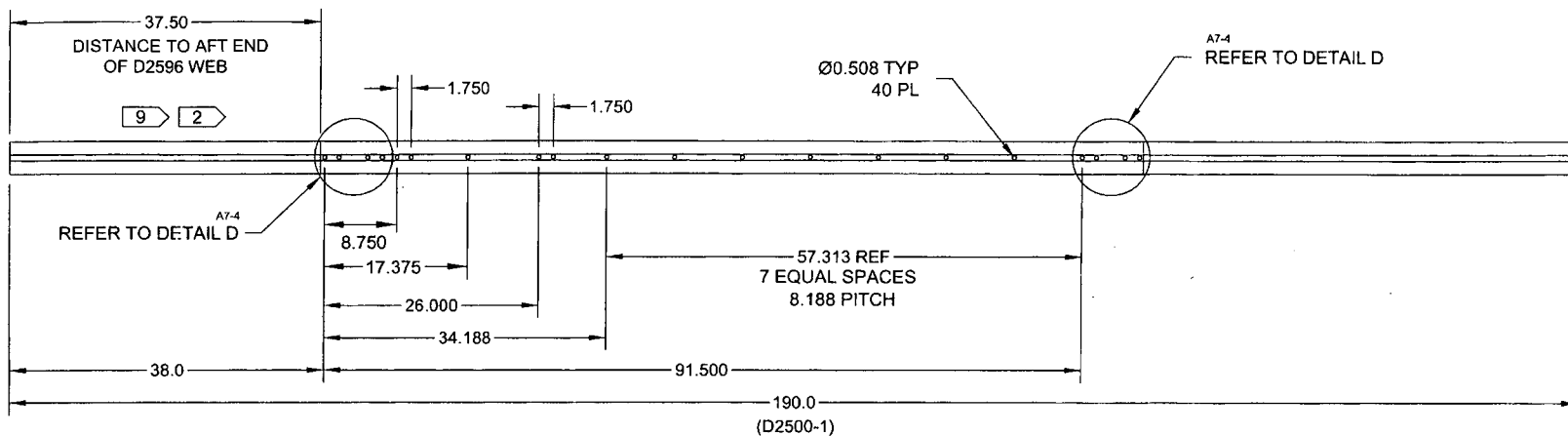
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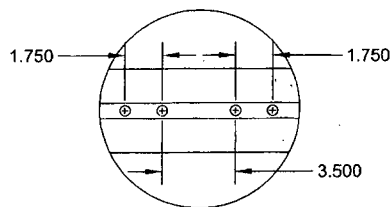
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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

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D2580-101 TUBE



DETAIL D D3-4
SCALE 5X C7-4

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

NO. 271

AWS D17.1.2001
QUALIFICATION TEST RECORD

Name: Barclay Elliott
Job number: 72859
Part number: A 205 - 634 - 041
Description: 205 Skid tube
Welding Process: Tig ☒ Mig ☐
Base material: Aluminium
Current: AC ☒ DC ☐

TEST REQUIREMENTS AND RESULTS

Visual: pass ☒ fail ☐
Penetration: pass ☒ fail ☐

UNACCEPTABLE

Cracks: pass ☒ fail ☐
Undercut: pass ☒ fail ☐
Pin holes: pass ☒ fail ☐
Overlap (cold lap): pass ☒ fail ☐
Porosity (surface): pass ☒ fail ☐
Coloration: pass ☒ fail ☐

Qualifier Pat. Dunn Date of Test Coupon 11-10-12
Welder Barclay Elliott Date of Test Coupon 11-10-12

The above named individual is qualified in accordance with AWS D17.1.2001 to weld